



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,633	01/22/2002	Niall R. Lynam	DON01 P-962	5792
28101	7590	06/07/2005	EXAMINER	
VAN DYKE, GARDNER, LINN AND BURKHART, LLP			NEGRON, ISMAEL	
2851 CHARLEVOIX DRIVE, S.E.			ART UNIT	
P.O. BOX 888695			PAPER NUMBER	
GRAND RAPIDS, MI 49588-8695			2875	

DATE MAILED: 06/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Ag ✓

Office Action Summary	Application No.	Applicant(s)	
	10/054,633	LYNAM ET AL.	
	Examiner	Art Unit	
	Ismael Nègron	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 130-133, 135-184, 251 and 252 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 130-133, 135-184, 251 and 252 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Response to Amendment

2. Applicant's amendment filed on April 25, 2005 has been entered. Claims 130, 135 and 136 have been amended. No claim has been cancelled or added. Claims 1-133, 135-184, 251 and 252 are still pending in this application, with Claim 1 being independent.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2875

3. Claims 130-133, 135-138, 152-159, 163, 164, 167-171, 178 and 252 are rejected under 35 U.S.C. 103(a) as obvious over BOS et al. (U.S. Pat. 5,671,996) in view of NATIONAL SEMICONDUCTOR (LM78S40 Universal Switching Regulator Subsystem Data Sheet).

4. BOS et al. discloses a vehicle illumination system having:

- **an accessory module assembly (as recited in Claim 130),**
Figure 1, reference number 10;
- **the module assembly being adapted for attachment to an interior portion of a vehicle (as recited in Claim 130),** column 1, lines 57-66;
- **the module assembly being configured to illuminate an area inside the vehicle (as recited in Claim 130),** column 4, lines 55-60;
- **the module assembly being attached to an interior portion of the vehicle (as recited in Claim 130),** column 1, lines 57-66;
- **the module assembly including a single non-incandescent light source (as recited in claims 130 and 166),** Figure 4, reference number 90;
- **the single light source being a single high-intensity power light emitting diode (HiLED) (as recited in Claim 130),** column 6, lines 65 and 66;

- **the HiLED illuminating the area with an efficiency of at least 1 lumen/watt (as recited in Claim 130), column 7, lines 1-8;**
- **the HiLED being operated at a current of at least 100 mA (as recited in Claim 130), column 7, lines 40-43;**
- **the voltage conversion element converting a battery/ignition voltage of the vehicle to the forward operating voltage of the HiLED (as recited in Claim 130), column 8, lines 14-26;**
- **the illuminated area being at a distance greater than 20 inches from the module assembly (as recited in Claim 131), as seen in Figure 2;**
- **the illuminated area being at a distance greater than 40 inches from the module assembly (as recited in Claim 132), as seen Figure 2;**
- **the illuminated area being at a distance of about 20 to 40 inches from the module assembly (as recited in Claim 133), Figure 4, reference number 2;**
- **a voltage conversion element (as recited in claim 134, 163 and 164), column 8, lines 14-26;**
- **the voltage conversion element having a step-down ration of at least about 2 to 1 (as recited in Claim 134), column 8, lines 14-26;**

- **the voltage conversion element having a step-down ration of at least about 4 to 1 (as recited in Claim 135), column 8, lines 14-26;**
- **the voltage conversion element having a step-down ration of at least about 6 to 1 (as recited in Claim 136), column 8, lines 14-26;**
- **the HiLED emitting at least 1 lumen (as recited in Claim 137), column 7, lines 40-43;**
- **the HiLED emitting at least 5 lumen (as recited in Claim 138), column 7, lines 40-43;**
- **the module assembly including a light directing element (as recited in Claim 141), Figure 6, reference number 100;**
- **the light directing element directing light from the HiLED towards the interior area of the vehicle (as recited in Claim 141), column 8, lines 36-45;**
- **the HiLED operating at a voltage of at least about 1 volt (as recited in Claim 152), column 7, lines 16-18;**
- **the HiLED operating at a voltage of at least about 2 volts (as recited in Claim 153), column 7, lines 16-18;**
- **the HiLED operating at a voltage of at least about 2 to 5 volts (as recited in Claim 154), column 7, lines 16-18;**

- **the HiLED operating at a voltage of less than about 50% of the battery/ignition voltage of the vehicle (as recited in Claim 155), column 8, lines 14-22;**
- **the HiLED operating at a voltage of less than about 35% of the battery/ignition voltage of the vehicle (as recited in Claim 156), column 8, lines 14-22;**
- **the HiLED operating at a voltage of less than about 20% of the battery/ignition voltage of the vehicle (as recited in Claim 157), column 8, lines 14-22;**
- **the battery/ignition voltage being about 12 volts (as recited in Claim 158), column 8, lines 20-22;**
- **the battery/ignition voltage being in the range of about 12 volts to 42 volts (as recited in Claim 159), column 8, lines 20-22;**
- **a power resistor (as recited in claims 163, 177 and 252), Figure 4, reference number 92;**
- **the HiLED assembly being removable (as recited in Claim 167), as seen in Figure 4;**
- **the accessory module including a mirror assembly (as recited in Claim 168), as seen in Figure 2;**
- **the light directing element being a lens (as recited in Claim 169), column 8, lines 36-38;**

- **light from the HiLED assembly passing through the lens (as recited in Claim 169), inherent;**
- **the lens being one selected from the group consisting of a diffractive and refractive optical element (as recited in Claim 170), column 8, lines 38-40;**
- **the lens being one selected from the group consisting of a Fresnel-optic lens, a binary optic lens, a diffusive-optic lens, a holographic-optic lens and a sinusoidal-optic lens (as recited in Claim 171), column 8, lines 38-40;**
- **the module assembly including the voltage conversion element (as recited in Claim 178), as seen in Figure 4;**
- **the interior portion including a header assembly (as recited in Claim 183), as seen in Figures 12 and 13; and**
- **the accessory module including an interior rearview mirror assembly (as recited in Claim 184), as seen in Figure 2.**

5. BOS et al. discloses all the limitations of the claims, except the voltage conversion means having a current step-up ratio equal to the voltage step-down ratio (as recited in Claim 130).

6. NATIONAL SEMICONDUCTOR discloses voltage conversion means having a current step-up ratio equal to the voltage step-down ratio (as recited in Claim 130), see Figure 1 (page 6).

Art Unit: 2875

7. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to substitute the voltage-divider converter of BOS et al. with the voltage conversion means of NATIONAL SEMICONDUCTOR to increase the efficiency of the voltage step-down conversion system, reduce generated heat, and to provide a stable power source for the LED independent of input voltage variations.

8. Claims 139-151, 160-162, 165, 166, 172-177, 179-184 and 251 are rejected under 35 U.S.C. 103(a) as obvious over BOS et al. (U.S. Pat. 5,671,996) in view of NATIONAL SEMICONDUCTOR (LM78S40 Universal Switching Regulator Subsystem Data Sheet) as applied to claims 130, 155 and 252 above, further in view of COLLINS et al. (U.S. Pat. 3,676,668).

9. BOS et al. and NATIONAL SEMICONDUCTOR disclose individually, or suggest in combination, vehicle illumination systems meeting all the limitations of the claims, including:

- **the module assembly including a light directing element (as recited in Claim 141), BOS et al. Figure 6, reference number 100;**
- **the light directing element directing light from the HiLED towards the interior area of the vehicle (as recited in Claim 141), BOS et al. column 8, lines 36-45;**

- **the module assembly including a single non-incandescent light source (as recited in Claim 166), BOS et al. Figure 4, reference number 90;**
- **a power resistor (as recited in Claim 177), BOS et al. Figure 4, reference number 92;**
- **the interior portion including a header assembly (as recited in Claim 183), as seen in BOS et al. Figures 12 and 13; and**
- **the accessory module including an interior rearview mirror assembly (as recited in Claim 184), as seen in BOS et al. Figure 2.**

10. The combined teachings of BOS et al. and NATIONAL SEMICONDUCTOR disclose or suggest all the limitations of the claims, except :

- a heat dissipation element (as recited in claims 251, 146, 147, 165, 175 and 176);
- the heat dissipation element being adapted to dissipate heat from the HiLED (as recited in Claim 251);
- the HiLED emitting at least about 10 lumens (as recited in Claim 139);
- a heat sink having an area of at least about 1 square inch (as recited in Claim 144);

Art Unit: 2875

- the heat dissipation element including a reflective surface for reflecting light from the HiLED (as recited in claims 140, 142, 146, 172 and 179);
- the reflective surface reflecting light toward the illuminated area (as recited in claims 140, 172 and 179);
- the heat dissipation element being a heat-sink (as recited in claims 140, 147, 172 and 179);
- the heat sink being a metal heat sink (as recited in claims 143, 172 and 173);
- the HiLED being thermally coupled to the heat sink (as recited in Claim 148);
- the HiLED being thermally coupled to the heat sink by a heat sink compound (as recited in Claim 149);
- the HiLED operating at a current greater than about 250 mA (as recited in Claim 150);
- the HiLED operating at a current greater than about 350 mA (as recited in Claim 151);
- the vehicle's battery/ignition voltage being about 42 volts (as recited in Claim 159);
- the resistor being rated to dissipated at least about 2.5 watts (as recited in Claim 160);

Art Unit: 2875

- the resistor being rated to dissipated at least about 3.0 watts (as recited in Claim 161);
- the resistor being rated to dissipated at least about 3.5 watts (as recited in Claim 162);
- the metal of the heat sink having a high heat conductivity (as recited in Claim 173);
- the metal heat sink being made from a metal selected from the group consisting of a copper, copper alloy, aluminum and brass (as recited in Claim 174);
- the HiLED dissipating at least about 1 watt when operated (as recited in Claim 180);
- the HiLED dissipating at least about 1.5 watts when operated (as recited in Claim 181); and
- the HiLED dissipating at least about 2 watts when operated (as recited in Claim 182).

11. COLLINS et al. discloses light emitting diode having:

- **a heat dissipation element (as recited in claims 251, 146, 147, 175 and 176), Figure 4, reference number 12;**
- **the heat dissipation element being adapted to dissipate heat from the HiLED (as recited in Claim 251), inherent;**

- **the heat dissipation element including a reflective surface for reflecting light from the HiLED (as recited in claims 140, 142, 146, 172 and 179), Figure 4, reference number 14;**
- **the reflective surface reflecting light toward the illuminated area (as recited in claims 140, 172 and 179), column 2, lines 44-47;**
- **the heat dissipation element being a heat-sink (as recited in claims 140, 147, 172 and 179), as seen in Figure 3;**
- **the heat sink being a metal heat sink (as recited in claims 143, 172 and 173), column 2, line 8;**
- **a heat sink having a plurality of fins (as recited in Claim 145), Figure 4, reference numbers 17 and 18;**
- **the HiLED being thermally coupled to the heat sink (as recited in Claim 148), column 2, lines 14-16;**
- **the metal of the heat sink having a high heat conductivity (as recited in Claim 173), inherent;**
- **the heat sink having fins, Figure 4, reference number 17 and 18;**
- **a reflector, Figure 4, reference number 14;**
- **the reflector including a heat sink, as seen in Figure 3;**
- **the reflector being configured to shape light emitted from the HiLED, column 2, lines 44-47.**

Art Unit: 2875

12. One of ordinary skill in the art at the time the invention was made would have recognized that the HiLED of the device of BOS et al. and NATIONAL SEMICONDUCTOR included the claimed metal heat-sink/reflector, specifically an aluminum heat-sink/reflector as such structures are a standard feature of most LED (as recited in claims 140, 142, 143, 146-149, 165, 172-176, 179 and 251). However, even if one of failed to recognized such fact, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the integrated metal heat-sink/reflector of COLLINS et al. in the HiLED of the device of BOS et al. and NATIONAL SEMICONDUCTOR, to increase the efficiency and light output of such HiLED, as per the teachings of COLLINS et al. (see column 2, lines 64-67).

13. Regarding the heat sink being specifically made from a metal selected from the group consisting of a copper, copper alloy, aluminum and brass (as recited in Claim 174)., the examiner takes Official Notice that the use of such materials is not only old and well known in the art, but a standardized practice. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a metal selected from the group consisting of a copper, copper alloy, aluminum and brass as the material of the heat sink. One would have been motivated since such materials are recognized in the art to have many desirable advantages, including low cost, high malleability, and high thermal conductivity, over other materials.

14. Regarding the claimed LED, heat sink and resistor properties, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to

Art Unit: 2875

use HiLED, heat sink and resistors having the specific properties claimed by the instant invention (as recited in claims 139, 144, 145, 149-151, 160-162 and 180-182), since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only ordinary skill in the art. *In re Aller*, 105 USPQ 233. In this case the device of BOS et al. and NATIONAL SEMICONDUCTOR disclose using a HiLED for illuminating the interior of a vehicle, selecting a specific HiLED, heat sink and its appropriate power resistor would have been an obvious matter of choice depending on the particular requirements of a specific application.

15. Regarding the vehicle's battery/ignition voltage being about 42 volts, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to design the voltage conversion element of BOS et al. and NATIONAL SEMICONDUCTOR to work with a vehicle's battery/ignition voltage of 42 volts (as recited in Claim 159), since such 42 volts voltage is the new proposed standard for vehicles electric systems.

Response to Arguments

16. Applicant's arguments filed April 25, 2005, with respect to the rejection of Claim 130 under 35 U.S.C. 103(a) as obvious over BOS et al. (U.S. Pat. 5,671,996) in view of COLLINS et al. (U.S. Pat. 3,676,668), have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new grounds of rejection have been presented.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ismael Negrón whose telephone number is (571) 272-2376. The examiner can normally be reached on Monday-Friday from 9:00 A.M. to 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra L. O'Shea, can be reached on (571) 272-2378. The facsimile machine number for the Art Group is (703) 872-9306.

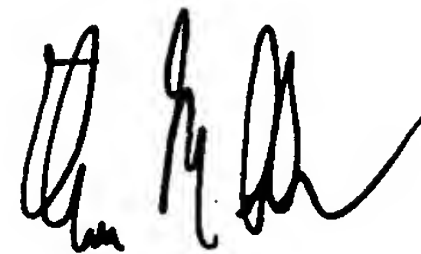
18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, go to <http://pair-direct.uspto.gov>. Should you

Art Unit: 2875

have questions on access to Private PAIR system, contact the Electronic Business Center (EBC) toll-free at 866-217-9197.


Inr

June 1, 2005



THOMAS M. SEMBER
PRIMARY EXAMINER